SCHEME

&

SYLLABUS

B.Tech Electronics & Communication Engineering

Choice Based Credit Scheme w.e.f. 2018-19

Department of Electronics & Communication Engineering

Deenbandhu Chhotu Ram University of Science & Technology,

Murthal (Sonipat), Haryana, 131027

B. Tech. (Electronics & Comm. Engg.) 2nd Year: Approved in 14th meeting of Academic Council held on 11.06.2019. Effective from Academic Session 2019-20 and applicable to all students admitted in 2018 and onwards.

Deenbandhu Chhotu Ram University of Science & Technology, Murthal (Sonepat)
Department of Electronics & Communication Engineering
SCHEME OF STUDIES & EXAMINATIONS
B.Tech. IInd YEAR (SEMESTER –III)
Choice Based Credit Scheme w.e.f. 2019-20

S. No.	Course No.	Course Title	Teaching Schedule			Marks of Class work	Examination Marks		Total	Credit	Duration of Exam	Contact Hrs./wk.
			L	T	P		Theory	Practical				
1	ECE201C	Electronic Devices	3	0	0	25	75	-	100	3	3	3
2	ECE281C	Electronic Devices lab	0	0	2	25	-	75	100	1	3	2
3	ECE203C	Digital System Design	3	0	0	25	75	-	100	3	3	3
4	ECE283C	Digital System Design lab	0	0	2	25	-	75	100	1	3	2
5	ECE205C	Signals and Systems	3	0	0	25	75	-	100	3	3	3
6	ECE207C	Network Theory	3	0	0	25	75	-	100	3	3	3
7		(Slot for BS/ES/HS courses)*	3	0	0	25	75	-	100	3	3	3
			3	0	0	25	75	-	100	3	3	3
8	MC203C or MC201C	Constitution of India **(Gr.-A)** **or** Environmental Studies**(Gr.-B)**	3	0	0	25	75	-	100	-	3	3
Total			**21**	**0**	**4**	**225**	**525**	**150**	**900**	**20**	-	-

Note:

1. (*) Select any two subjects from table given below:-

S. No.	Course No.	Course Title	Teaching Schedule			Marks of Class work	Examination Marks		Total	Credit	Duration of Exam	Contact Hrs./wk.
			L	T	P		Theory	Practical				
1	MGT201C	Engineering Economics	3	0	0	25	75	-	100	3	3	3
2	CSE201C	Data Structures & Algorithms	3	0	0	25	75	-	100	3	3	3
3	CSE203C	Computer Organization & Architecture	3	0	0	25	75	-	100	3	3	3

2. Environmental Studies (MC201C)/ Constitution of India (MC203C) are mandatory & qualifying courses.
3. For DCRUST Murthal: GROUP A: BME, BT, CSE, ECE. GROUP B: CE, CHE, EE, ME.
4. Engg. Economics (MGT201C) is common with 3rd Semester Mech, CSE, ECE and 4th Semester Civil & Chemical Engg.
5. For student admitted in B. Tech. 1st Semester (C-Scheme) in 2019 and all trailing students, Examinations and evaluation of students shall be conducted as per guidelines AICTE Examinations Reforms covering the entire syllabus. The students shall be made aware about the reforms.

Deenbandhu Chhotu Ram University of Science & Technology, Murthal (Sonepat)
Department of Electronics & Communication Engineering
SCHEME OF STUDIES & EXAMINATIONS
B.Tech. IInd YEAR (SEMESTER –IV)
Choice Based Credit Scheme w.e.f. 2019-20

S. No.	Course No.	Course Title	Teaching Schedule			Marks of Class work	Examination Marks		Total	Credit	Duration of Exam	Contact Hrs./wk.
			L	T	P		Theory	Practical				
1	ECE202C	Communication System	3	0	0	25	75	-	100	3	3	3
2	ECE282C	Communication System lab	0	0	2	25	-	75	100	1	3	2
3	ECE204C	Analog Circuits	3	0	0	25	75	-	100	3	3	3
4	ECE284C	Analog Circuits lab	0	0	2	25	-	75	100	1	3	2
5	ECE206C	Microprocessor & Interfacing	3	0	0	25	75	-	100	3	3	3
6	ECE286C	Microprocessor & Interfacing lab	0	0	2	25	-	75	100	1	3	2
7		(Slot for BS/ES/HS courses)*	3	0	0	25	75	-	100	3	3	3
			0	0	2	25	-	75	100	1	3	2
			3	0	0	25	75	-	100	3	3	3
			0	0	2	25	-	75	100	1	3	2
8	MC201C or MC203C	Environmental Studies **(Gr.-A)** **or** Constitution of India **(Gr.-B)**	3	0	0	25	75	-	100	-	3	3
Total			**18**	**0**	**10**	**275**	**450**	**375**	**1100**	**20**		

Note:

1. (*) Select any two subjects (along with respective lab) from table given below:-

S. No.	Course No.	Course Title	Teaching Schedule			Marks of Class work	Examination Marks		Total	Credit	Duration of Exam	Contact Hrs./wk.
			L	T	P		Theory	Practical				
1	CSE214C	Object Oriented Programming	3	0	0	25	75	-	100	3	3	3
2	CSE284C	Object Oriented Programming Lab	0	0	2	25	-	75	100	1	3	2
3	MATH211C	Numerical Methods	3	0	0	25	75	-	100	3	3	3
4	MATH213C	Numerical Methods lab	0	0	2	25	-	75	100	1	3	2
5	CSE303C	Data Base Management System	3	0	0	25	75	-	100	3	3	3
6	CSE383C	Data Base Management System Lab	0	0	2	25	-	75	100	1	3	2

2. At the end of 4th semester each student has to undergo Professional Training (level-2) of atleast four weeks from industry, institute, research lab, training centre during summer vacation and its evaluations shall be carried out in the 5th semester.
3. Environmental Studies(MC201C)/ Constitution of India (MC203C) are mandatory & qualifying courses.
4. For DCRUST Murthal: GROUP A: BME, BT, CSE, ECE. GROUP B: CE, CHE, EE, ME.
5. For student admitted in B. Tech. 1st Semester (C-Scheme) in 2019 and all trailing students, Examinations and evaluation of students shall be conducted as per guidelines AICTE Examinations Reforms covering the entire syllabus. The students shall be made aware about the reforms.

ECE201C Electronic Devices

B.Tech. 2nd YEAR (SEMESTER –III)
Electronics & Communication Engineering

L	T	P	Credits		
3	0	0	3	Class Work	: 25
				Examination	: 75
				Total	: 100
				Duration of Exam	: 3 Hours

Unit 1 (9 Lectures)

Basic Semiconductor And Pn-Junction Theory: Introduction, Atomic Structure, Band Theory of Semiconductors, Covalent Bond, Metals, Insulators & Semiconductors, Effect of Temperature on Conduction, Drift Current ,Donor & Accepter Impurities in Semiconductor, Law Of Mass Action, Hall's Effect, Hall Coefficient & Mobility, Poisson and continuity equation.
Characteristics Of Diode:PN-Junction, Construction Types, Unbiased Junction, Biased Junction, Space Charge Region, Diode Characteristics & Parameters, Diode Capacitance, Diode Resistance, DC And AC Load Lines, Diode Testing, Zener And Avalanche Breakdown Diodes, Tunnel Diode, Temperature Characteristics of Diode, Reverse Recovery Time, Switching Characteristics of Diode.

Unit 2 (12 Lectures)

Diode Applications: Half Wave, Full Wave Center Tapped, Full Wave Bridge(Rectification), Series Clipping Circuit, Shunt Clipping Circuit, Clamping Circuit, Bridge Voltage Doubler, Filtering Circuit Using Capacitor & Inductor.
Junction Transistor: Introduction, Construction Of Junction Transistor, Circuit Symbols, Transistor Operation, Unbiased Transistor, Operation Of Biased Transistor, Transistor Current Components, DC & AC Load Line, Operating Point, Transistor Configuration CB, CE, CC, Input/Output Characteristics, Early Effect(Base Width Modulation), Eber's-Moll-Model of Transistor, Maximum Rating of Transistor, Transistor Testing, Transistor as an Amplifier, Transistor as Oscillator.

Unit 3 (12 Lectures)

Bjt Biasing: Bias Stability, Instability Due To β, Thermal Stability, Stability Factor, Fixed Biased Circuits, Effect of Emitter Resistor, Collector to Base Bias, Voltage Divide Biasing, Advantage & drawbacks of Biasing Techniques, Stability Factor calculation of Biasing Techniques, Bias Compensation by various device, Thermal Runway, Transistor Dissipation, Thermal Resistance, Condition of Thermal Stability
Small Signal Circuit: Two Port Network, Hybrid(H-Parameter)Model, Typical Values of H-Parameter Model, Conversion of CE, CB, CC Configuration to Equivalent Hybrid Model, CB Circuit Analysis, CE circuit with & without R_E analysis, CC circuit analysis, Analysis of CE, CB & CC Configuration with approximate Hybrid Model, Miller's Theorem, Dual of Miller Theorem.

Unit 4 (9 Lectures)

FET: Introduction, The Junction FET, Basic Construction, Operation, P- Channel FET, N-Channel FET, High Frequency Model of FET, Low Frequency FET Amplifiers, Transfer Characteristics of FET, MOSFET, Enhancement Mode, Depletion Mode of FET, Circuit Symbol of MOSFET,V-MOSFET.
Special Semicondutor Devices: Optoelectronic Devices, Photoconductors, Photo Diode, Photo Transistor, Photo Voltaic Sensor, Photo Emission, Solar Cells, LED, LCD, Laser Diode, Schottky Diode, SCR, TRIAC, DIAC, UJT, Single Electron Transistor. Infrared LEDs, IGBT, Opto Coupler.

Text/Reference Books:

1. Basic Electronics — By Debashion DE. – Pearson Education.
2. Electronics Device & Circuit — By Robert Boylestad ,Louis Nashelsky, 11th Edition, Pearson Education,2015.
3. Electronics Device Circuit — By David.A.Bell -- Oxford
4. Integrated Electronics — By Millman Halkias -- TMH.
5. Electronics Device &Circuit — By Dharam Raj Cheruku -- Pearson Education.
6. Electronics Device &Circuit — By B.P Singh and Rekha Singh 2nd Edition – Pearson Education.

Course Outcomes: At the end of the course, students will be able to:

1. Understand the working of switching devices and apply the same in designing complex circuits with fewer devices.
2. Design amplifier and other complex circuits with the help of special semiconductor devices which will further increase real time applications and reduce runaway situations.
3. Apply the mathematical modeling for the electronic devices and circuits in turn helps in improvement in design in terms of size, power requirement and ease of use.
4. Use variety of electronic devices for designing society friendly electronic gadgets used for security and other useful purposes.

Note:

1. In Semester Examinations, the examiner will set two questions from each unit (total 8 questions in all) covering the entire syllabus. The students will be required to attend only five questions selecting atleast one question from each unit.
2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.

For student admitted in B. Tech. 1st Year (C-Scheme) in 2019 and all trailing students.

Examinations and evaluation of students shall be conducted as per guidelines AICTE Examinations Reforms covering the entire syllabus. The students shall be made aware about the reforms.

ECE281C Electronic Devices Lab

B.Tech. 2nd YEAR (SEMESTER –III)
Electronics & Communication Engineering

L	T	P	Credits		
0	0	2	1	Class Work	: 25
				Examination	: 75
				Total	: 100
				Duration of Exam	: 3 Hours

LIST OF EXPERIMENTS:

1. Analysis & study of half wave and full wave rectifiers.
2. Analysis & study of power supply filter.
3. Analysis & study of diode as a clipper and clamper.
4. Analysis & study of Zener Diode as a voltage regulator.
5. Analysis & study of CE amplifier for voltage, current and power gains, input & output impedances.
6. Analysis & study of CC amplifier as a buffer.
7. Analysis & study of the frequency response of RC coupled amplifier.
8. Analysis & study of transistor as a constant current source in CE configuration.
9. To study the characteristics of FET.
10. Analysis & study of FET common source amplifier.
11. Analysis & study of FET common drain amplifier.
12. Study and design of a DC voltage doubler.
13. To study characteristics of SCR.
14. To study characteristics of DIAC.
15. To study UJT as a relaxation oscillator.

Text/Reference Books:

1. Basic Electronics — By Debashion DE. – Pearson Education.
2. Electronics Device & Circuit, — By Robert Boylestad ,Louis Nashelsky, 11th Edition, Pearson Education,2015.
3. Electronics Device Circuit — By David.A.Bell -- Oxford
4. Integrated Electronics — By Millman Halkias -- TMH.
5. Electronics Device &Circuit — By Dharam Raj Cheruku -- Pearson Education.
6. Electronics Device &Circuit — By B.P Singh and Rekha Singh 2nd Edition – Pearson Education.

Course Outcomes: At the end of the course, students will be able to:

1. Understand the characteristics of diodes, transistors, JFETs, and op-amps.
2. Understand the operation and characteristics of different configurations of BJT.
3. Understand the operation and characteristics of different special semiconductor devices.
4. Design complex electronic circuits with fewer devices.
5. Optimize power requirement in design of complex electronic circuits.

Note:-

1. Each laboratory class/section shall not be more than about 20 students.
2. To allow fair opportunity of practical hands on experience to each student, each experiment may either be done by each student individually or in group of not more than 3-4 students. Larger groups be strictly discouraged/disallowed.
3. Ten experiments are to be performed out of which at least seven experiments should be performed from the above list. Remaining three experiments should be performed from the above list or designed and set by the concerned department as per the scope of the syllabus.

ECE203C Digital System Design

B.Tech. 2nd YEAR (SEMESTER –III)

(Common for ECE and CSE)

L	T	P	Credits		
3	0	0	3	Class Work	: 25
				Examination	: 75
				Total	: 100
				Duration of Exam	: 3 Hours

Unit 1 (9 Lectures)

Logic Simplification: Review of Boolean Algebra and DeMorgan's Theorem, SOP & POS forms, Canonical forms, Realization Using Gates. Karnaugh maps up to 6 variables, VEM technique, Binary codes, Code Conversion. Numericals.

Unit 2 (12 Lectures)

Combinational & Sequential Logic Design: Comparators, Multiplexers, Encoder, Decoder, Display devices, Half and Full Adders, Subtractors, Parallel Adders, Adder with Look Ahead Carry, BCD Adder. Sequential Logic Design: Building blocks like S-R, JK and Master-Slave JK FF, Edge triggered FF, Ripple and Synchronous counters, Sequence Generator, Shift registers.

Unit 3 (12 Lectures)

Finite state machines: Introduction, Design of synchronous FSM: Serial Binary Adder, Sequence detector, Parity Bit Generator, pulse train generator. Algorithmic State Machines charts: Introduction, Component of ASM chart, Introductory examples of ASM chart.

Unit 4 (12 Lectures)

Logic Families and PLDs: TTL NAND gate, Specifications, Noise margin, Propagation delay, fan-in, fan-out, Tristate TTL, ECL, CMOS families and their interfacing. Concept of Programmable logic devices like PAL, PLA, ROM, CPLD and FPGA. Logic implementation using Programmable Devices.

Text/Reference Books:

1. R.P. Jain, "Modern digital Electronics", Tata McGraw Hill, 4th edition, 2009
2. A.Anand Kumar, "Switching Theory & Logic Design", PHI.
3. W.H. Gothmann, "Digital Electronics- An introduction to theory and practice", PHI, 2nd edition, 2006.
4. D.V. Hall, "Digital Circuits and Systems", Tata McGraw Hill, 1989.
5. Morris Mano, "Digital Design: With an Introduction to the Verilog HDL", 5th Edition, Pearson Education, 2013.
6. Morris Mano, "Logic & Computer Fundamentals",4th Edition, Pearson Education.

Course Outcomes: At the end of the course, students will demonstrate the ability to:

1. Understand binary codes, binary arithmetic, minimization techniques and their relevance to digital logic design.
2. Design & analyze modular combinational circuits with MUX/DEMUX, Decoder, Encoder and sequential logic circuits.
3. Understand finite state machines and develop a digital logic to find out sustainable solution of a real life problem.
4. Understand and implement various digital integrated circuits using different logic families and simple systems composed of PLDs.

Note:

1. In Semester Examinations, the examiner will set two questions from each unit (total 8 questions in all) covering the entire syllabus. The students will be required to attend only five questions selecting atleast one question from each unit.
2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.

For student admitted in B. Tech. 1st Year (C-Scheme) in 2019 and all trailing students.

Examinations and evaluation of students shall be conducted as per guidelines AICTE Examinations Reforms covering the entire syllabus. The students shall be made aware about the reforms.

ECE283C Digital System Design Lab

B.Tech. 2nd YEAR (SEMESTER –III)

(Common for ECE and CSE)

L	T	P	Credits		
0	0	2	1	Class Work	: 25
				Examination	: 75
				Total	: 100
				Duration of Exam	: 3 Hours

LIST OF EXPERIMENTS:

1. To study & verify the truth table of basic gates.
2. To realize and minimize logical functions using five & six variables K-Map method.
3. To verify the operation of Multiplexer & De-multiplexer.
4. To design Half Adder and Full Adder circuits.
5. To design Half Subtractor and Full Subtractor circuits.
6. To verify the truth table of S-R, J-K, T & D flip-flops .
7. To study Flip- Flop conversion.
8. To design & verify the operation of 3-bit Synchronous Up/Down Counter.
9. To design & verify the operation of Synchronous Decade Counter using J-K flip flop.
10. To design & verify operation of 4-bit Asynchronous Counter.
11. To design and implement a logical circuit to detect a Count Sequence.
12. To study the conversion of state diagram to state table and design the logical circuit.

Text/Reference Books:

1. R.P. Jain, "Modern digital Electronics", Tata McGraw Hill, 4th edition, 2009
2. A.Anand Kumar, "Switching Theory & Logic Design", PHI.
3. W.H. Gothmann, "Digital Electronics- An introduction to theory and practice", PHI, 2nd edition, 2006.

Course Outcomes: At the end of the course, students will demonstrate the ability to:

1. Implement the basic digital theory concepts practically and will be able to verify various results derived in theory.
2. Design, analyze and troubleshoot broad range of combinational and sequential circuits for various practical problems using basic gates and flip flops I.C's.
3. Develop technical writing skills to communication effectively and present one's own work.
4. Acquire teamwork skills for finding sustainable solution of a complex problem and working effectively in groups.

Note:-

1. Each laboratory class/section shall not be more than about 20 students.
2. To allow fair opportunity of practical hands on experience to each student, each experiment may either be done by each student individually or in group of not more than 3-4 students. Larger groups be strictly discouraged/disallowed.
3. Ten experiments are to be performed out of which at least seven experiments should be performed from the above list. Remaining three experiments should be performed from the above list or designed and set by the concerned department as per the scope of the syllabus.

ECE205C Signals and Systems

B.Tech. 2nd YEAR (SEMESTER –III)
Electronics & Communication Engineering

L	T	P	Credits		
3	0	0	3	Class Work	: 25
				Examination	: 75
				Total	: 100
				Duration of Exam	: 3 Hours

Unit 1(10 Lectures)

Introduction To Signal: Signal Definition, Classification with examples: Continuous –Time & Discrete –Time, Continuous –valued & Discrete –valued, Analog & Digital, Deterministic & Random, One Dimensional & Multi Dimensional, Even/Symmetric & Odd/Anti symmetric signals, Causal, Non causal & Anti causal; Real & Complex, Periodic & Aperiodic, Energy & Power signals; Representation of Discrete –Time signals, Elementary Discrete Time Signals.

Introduction To Discrete-Time Systems And Their Properties: Systems & Their Representation, Independent variable transformations: Time Shifting, Time Reversal, Time Scaling, time shifting and reversal; classification of Systems: Hardware, Software & Mixed Systems; Linear & Nonlinear Systems; Static/without memory & Dynamic/ with memory Systems, Causal & Non causal System; Invertible & Noninvertible; Stable & Unstable System, Time variant & Time Invariant Systems.

Unit 2(12 Lectures)

Linear-Time Invarient (Lti) Systems And Their Advantages:LTI Systems, Discrete –time Signal representation in terms of impulses, Impulse Response of Discrete Time LTI Systems, Finite Impulse Response System, Infinite Impulse Response System, LTI Systems Properties, LTI systems representation by Constant –Coefficient Difference Equation, LTI System Characterization, Cascade & Parallel Connection of LTI Systems.

Introduction To Frequency Domain Representation: Concept of frequency for analog signals and discrete –time signals, Fourier Series Representation of Periodic Signals, I/P O/P Relationship for LTI Systems using Fourier Series, Filtering Concept. Fourier Transform representation for Discrete –Time Signals, Properties of Discrete –Time Fourier Transform, Systems Characterized by Linear Constant Coefficient Difference Equations.

Unit 3(12 Lectures)

Laplace Transform: Definition and Region of Convergence, Laplace transform applications to LTI systems, Transfer function of LTI systems, Poles and Zeros in S-plane, Stability in S-domain.

Z-Transform And Its Inverse: Introduction to Z-Transform, Region of Convergence (ROC) for Z-Transform, ROC for: Finite & Infinite Duration; Causal, Anti causal & Noncausal signals; Z-Transform Properties, Relationship with Fourier Transform, Inverse Z-Transform, Rational Z –Transforms, Poles & Zeros of Signals & Systems, Pole Location and Time Domain behavior for Causal Signals; Applications of Z-Transform: System Function of an LTI System, Causality & Stability of LTI Systems, Pole Zero Cancellation.

Unit 4(10 Lectures)

State Variable Technique: State Space Representation of Continuous –Time LTI Systems with multi-input, multi-output; Solution of state equation for Continuous –Time Systems.

State Space Representation of Discrete –Time LTI Systems: single input single output and multiple input multiple output systems, Solution of State Equation for Discrete-time LTI Systems, Determining System function H(z).

Text Books:

1. A. V. Oppenheim, A. S. Willsky, with S. Nawab "Signals & Systems", 2nd Edition, Pearson Education, 2015.
2. S. Salivahanan, C. Gnanapriya, " Digital Signal Processing", Second Edition, McGraw Hill Education.
3. J. G. Proakis, D. G. Manolakis, "Digital Signal Processing, Principles, Algorithms, & Applications", 4th Edition, Pearson Education.

Reference Books:

1. Smarajit Ghosh,"Signal & Systems",Pearson Education.
2. Nagrath & R. Ranjan, "Signals & Systems", TMH.
3. Schaum Series, "Signals & Systems",Sue & Ranjan.
4. R.F. Ziemer, W.H. Tranter and D.R. Fannin, "Signals and Systems - Continuous and Discrete", 4th Edition, Pearson Educatio.
5. B.P. Lathi, "Signal Processing and Linear Systems", Oxford University Press, c1998.
6. Douglas K. Lindner, "Introduction to Signals and Systems", McGraw Hill International Edition
7. M. J. Roberts, "Signals and Systems - Analysis using Transform methods and MATLAB", TMH, 2003.

Course Outcomes: At the end of this course students will demonstrate the ability to:

1. Understand and classify different types of signals and systems as per their properties.
2. Represent continuous and discrete time signals and systems in time and frequency domain using different transforms. Understanding frequency concepts for analog and digital signals.
3. Get familiarized with the characteristics and applications of Linear Time Invariant Systems for practical applications.
4. Analyze LTI systems using Laplace/Z-Transform. Use of LTI systems as filters for various applications.

Note:

1. In Semester Examinations, the examiner will set two questions from each unit (total 8 questions in all) covering the entire syllabus. The students will be required to attend only five questions selecting atleast one question from each unit.
2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.

For student admitted in B. Tech. 1st Year (C-Scheme) in 2019 and all trailing students.

Examinations and evaluation of students shall be conducted as per guidelines AICTE Examinations Reforms covering the entire syllabus. The students shall be made aware about the reforms.

ECE207C Network Theory

B.Tech. 2nd YEAR (SEMESTER –III)
Electronics & Communication Engineering

L	T	P	Credits		
3	0	0	3	Class Work	: 25
				Examination	: 75
				Total	: 100
				Duration of Exam	: 3 Hours

Unit 1 (10 Lectures)

Fundamentals of Network Analysis: Node and Mesh Analysis, matrix approach of network containing voltage and current sources, and reactances, source transformation and duality**.**
Network theorems: Superposition, reciprocity, Thevenin's, Norton's, Maximum power Transfer, compensation and Tallegen's theorem as applied to AC. circuits.

Unit 2 (14 Lectures)

Trigonometric and exponential Fourier series: Discrete spectra and symmetry of waveform, steady state response of a network to non-sinusoidal periodic inputs, power factor, effective values.
Fourier Transform& Laplace Transform: Fourier transform and continuous spectra, three phase unbalanced circuit and power calculation.
Laplace transforms and properties: Partial fractions, singularity functions, waveform synthesis.

Unit 3 (11 Lectures)

A.C Analysis: Analysis of RC, RL, and RLC networks with and without initial conditions with Laplace transforms evaluation of initial conditions, Behaviors of series and parallel resonant circuits.
Transient behavior: concept of complex frequency, Driving points and transfer functions poles and zeros of immittance function, their properties, sinusoidal response from pole-zero locations, convolution theorem.

Unit 4 (7 Lectures)

Two port network and interconnections: Characteristics and parameters of two port networks**,** Network Configurations**,** short-circuit Admittance parameters, open-circuit impedance parameters, Transmission parameters, hybrid parameters, condition for reciprocity & symmetry, Inter-relationships between parameters of two-port network sets, Inter-connection of two port networks.
Topology: Principles of network topology, graph matrices, network analysis using graph theory
Filter Analysis: Introduction to band pass, low pass, high pass and band reject filters, Analysis & design of prototype high-pass, prototype low-pass, prototype band-pass, and prototype band-reject filter.

Text Books:

1. Van, Valkenburg.; "Network analysis" ; Prentice hall of India, 2000
2. Sudhakar A. Shyammohan, S. P.; "Circuits and Network"; Tata McGraw-Hill New Delhi, 1994
3. A William Hayt, "Engineering Circuit Analysis" 8th Edition, McGraw-Hill Education

Reference Books:

1. Network Theory by U.A Bakshi, V.A Bakshi, Technical Publications
2. "Fundamentals of Electric Circuit" by C.K Alexander and Sadiku.
3. A.V. Oppenheim, A.S. Willsky, with S. Nawaab "Signals & Systems",Prentice –Hall India

Course Outcomes: At the end of this course students will demonstrate the ability to

1. Understand basics electrical circuits with nodal and mesh analysis.
2. Appreciate electrical network theorems.
3. Apply Laplace Transform for steady state and transient analysis.
4. Determine different network functions.

Note:

1. In Semester Examinations, the examiner will set two questions from each unit (total 8 questions in all) covering the entire syllabus. The students will be required to attend only five questions selecting atleast one question from each unit.
2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.

For student admitted in B. Tech. 1st Year (C-Scheme) in 2019 and all trailing students.
Examinations and evaluation of students shall be conducted as per guidelines AICTE Examinations Reforms covering the entire syllabus. The students shall be made aware about the reforms.

MC203C Constitution of India

B.Tech. 2nd YEAR (SEMESTER –III)
Common for all branches

L	T	P	Credits		
3	-	-	-	Class Work	: 25
				Examination	: 75
				Total	: 100
				Duration of Exam	: 3 Hours

Unit 1 (10 Lectures)

Philosophy of Indian Constitution: Ideological Basis and Salient Features of Indian Constitution, Fundamental Rights & Duties of the Citizens**,** Directive Principles of State Policy

Unit 2 (12 Lectures)

Nature and Dynamics of Indian Federalism: Federalism: Theory and Practice in India, Federal Features of the Indian Constitution**,**Legislative, Administrative and Financial Relations between the Union and the States.

Unit 3 (12 Lectures)

Union and State Legislature: Parliament: Composition, Functions and Working of the Parliamentary system **,**State Legislature: Composition and Functions of Vidhan Sabha/ Vidhan Parishad.

Unit 4 (11 Lectures)

Centre and State: Executive and Judiciary: President, Prime Minister and Council of Ministers **,**Governor, Chief Minister and Council of Ministers**,**Judiciary: Supreme Court; High Court

Text Books:

1. Austin G., *The Indian Constitution: Corner Stone of a Nation*, New Delhi: Oxford University Press, 196
2. Basu D.D., *An Introduction to the Constitution of India*, New Delhi: Prentice Hall, 1994
3. Kothari R., *Politics in India*, New Delhi: Orient Language, 1970
4. Siwach J.R., *Dynamics of Indian Government and Politics*, New Delhi: Sterling Publishers, 1985
5. Bhambhri C.P., *The Indian State--Fifty Years*, New Delhi: Shipra, 1997
6. Ghai U.R., *Indian Political System*, Jalandhar: New Academic Publishing Company, 2010

Course Outcomes: Upon successful completion of this course,students will be able:

1. To understand basic features of the constitution and rights and duties of Indian citizens
2. To understand the basic structure of Centre and State Government
3. To get acquainted with the nature of parliamentary form of Government
4. To have knowledge of the executive and judiciary powers in Indian democratic set-up

Note:

1. In Semester Examinations, the examiner will set two questions from each unit (total 8 questions in all) covering the entire syllabus. The students will be required to attend only five questions selecting atleast one question from each unit.
2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.

For student admitted in B. Tech. 1st Year (C-Scheme) in 2019 and all trailing students.

Examinations and evaluation of students shall be conducted as per guidelines AICTE Examinations Reforms covering the entire syllabus. The students shall be made aware about the reforms.

MGT201C Engineering Economics

B.Tech. 2nd YEAR (SEMESTER –III)
Electronics & Communication Engineering
(Common with 3rd Semester Mech, CSE and 4th Semester Civil & Chemical Engg.)

L	T	P	Credits		
3	0	0	3	Class Work	: 25
				Examination	: 75
				Total	: 100
				Duration of Exam	: 3 Hours

Unit 1 (10 Lectures)

Concept of Economics- various definitions, nature of Economic problem, Micro and macro economics- their features and scope, production possibility curve, Relationship between Science, Engineering Technology and Economics. Utility: Concept and measurement of utility, Law of Diminishing Marginal Utility, Law of equi-marginal utility – its importance and practical applications**.**

Unit 2 (12 Lectures)

Demand: Concept, Individual and Market demand schedule, Law of demand, shape of demand curve. Elasticity of demand: Concept, measurement of elasticity of demand, factors affecting elasticity of demand, practical application of elasticity of demand. Various concepts of cost-Fixed cost, variable cost, average cost, marginal cost, money cost, real cost, opportunity cost. Shape of average cost, marginal cost, total cost etc. in short run and long run.

Unit 3 (12 Lectures)

Meaning of production and factors of production; Law of variable proportions, Law of Return to Scale, Internet and External economics and diseconomies of scale. Meaning of Market, Type of Marker– perfect Competition, Monopoly, Oligopoly, Monopolistic competition (Main features of these markers).

Unit 4 (11 Lectures)

Supply and Law of Supply, Role of Demand & Supply in Price Determination and effect of changes in demand and supply on price. Nature and characteristics of Indian economy, privatization – meaning, merits and demerits. Globalisation of Indian economy – meaning, merits and demerits.

Text Books:

1. Ahuja H.L"Micro Ecomomic Theory" S. Chand Publication, New Delhi
2. Dewett K.K "Modern Ecomomic Theory" S. Chand Publication, New Delhi
3. Jain T.R, Grover M.L, Ohri V.K Khanna O.P,"Economics for engineers" V.K .Publication ,New Delhi
4. Dr. R.K. Agarwal & Rashmi Agarwal, " Principles and Applications of Economic", Pragati Prakashan.

Suggested Books:

1. Jhingan 1. Jhingan M.L"Micro Ecomomic Theory" S.Chand Publication ,New Delhi
2. Chopra P.N "Principle of Economics" Kalyani Publishers, Delhi
3. Mishra S.K "Modern Micro Economics" Pragati Publication Mumbai.
4. Dwivedi D.N "Micro Economics " Pearson Education, New Delhi.

Course Outcomes: Upon successful completion of this course:

1. Students will acquire the skills to apply the basics of economics and cost analysis to engineering and take economically sound decision.
2. Acquaint the student with the basic economic concepts and their operational significance.
3. Stimulate the student to think systematically and objectively about cotemporary economic problems.
4. In Decision making with the availability of limited resources in the organization these concepts will act as a guiding tool.

Note:

1. In Semester Examinations, the examiner will set two questions from each unit (total 8 questions in all) covering the entire syllabus. The students will be required to attend only five questions selecting atleast one question from each unit.
2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.

For student admitted in B. Tech. 1st Year (C-Scheme) in 2019 and all trailing students.

Examinations and evaluation of students shall be conducted as per guidelines AICTE Examinations Reforms covering the entire syllabus. The students shall be made aware about the reforms.

CSE201C Data Structures & Algorithms

B.Tech. 2nd YEAR (SEMESTER –III)
Electronics & Communication Engineering
(Common with 3rd Semester CSE)

L	T	P	Credits		
3	0	0	3	Class Work	: 25
				Examination	: 75
				Total	: 100
				Duration of Exam	: 3 Hours

Unit 1 (8 Lectures)

Introduction: Basic Terminologies: Elementary Data Organizations, Data Structure operations: insertion, deletion, traversal etc. Analysis of an Algorithm, Asymptotic Notations , Time-Space trade off. Searching: Linear Search and Binary Search Techniques and their complexity analysis

Unit 2 (11 Lectures)

Stacks and Queues: ADT Stack and its operations: Algorithms and their complexity analysis, Applications of Stacks: Expression Conversion and evaluation – corresponding algorithms and complexity analysis. ADT queue, Types of Queue: Simple Queue, Circular Queue, Priority Queue; Operations on each types of Queues: Algorithms and their analysis.

Unit 3 (10 Lectures)

Linked Lists: Singly linked lists: Representation in memory, Algorithms of several operations: Traversing, Searching,Insertion into, Deletion from linked list; Linked representation of Stack and Queue, Header nodes, Doubly linked list: operations on it and algorithmic analysis; Circular Linked Lists: all operations their algorithms and the complexity analysis.

Trees: Basic Tree Terminologies, Different types of Trees: Binary Tree, Threaded Binary Tree, Binary Search Tree, AVL Tree; Tree operations on each of the trees and their algorithms with complexity analysis. Applications of Binary Trees. B Tree, B+ Tree: definitions, algorithms and analysis.

Unit 4 (12 Lectures)

Sorting and Hashing:Objective and properties of different sorting algorithms: Selection Sort, Bubble Sort, Insertion Sort, Quick Sort, Merge Sort, Heap Sort; Performance and Comparison among all the methods, Hashing.

Graph: Basic Terminologies and Representations, Graph search and traversal algorithms and complexity analysis.

Reference Books:

1. "Fundamentals of Data Structures" , Illustrated Edition by Ellis Horowitz, Sartaj Sahni, Computer Science Press.
2. "Algorithms, Data Structures, and Problem Solving with C++" , Illustrated Edition by Mark Allen Weiss, Addison-Wesley Publishing Company.
3. "How to Solve it by Computer" , 2nd Impression by R. G. Dromey, Pearson Education.

Course Outcomes: At the end of the course, students will be able to:

1. Analyze the algorithms to determine the time and computation complexity and justify the correctness.
2. Implement search problem (Linear Search and Binary Search) .
3. For a given problem of Stacks, Queues and linked list student will able to implement it and analyze the same to determine the time and computation complexity.
4. Student will able to write an algorithm Selection Sort, Bubble Sort, Insertion Sort,Quick Sort, Merge Sort, Heap Sort and compare their performance in term of Space and Time complexity and will able to implement Graph search and traversal algorithms and determine the time and computation complexity.

Note:

1. In Semester Examinations, the examiner will set two questions from each unit (total 8 questions in all) covering the entire syllabus. The students will be required to attend only five questions selecting atleast one question from each unit.
2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.

   For student admitted in B. Tech. 1st Year (C-Scheme) in 2019 and all trailing students.

   Examinations and evaluation of students shall be conducted as per guidelines AICTE Examinations Reforms covering the entire syllabus. The students shall be made aware about the reforms.

CSE203C Computer Organization and Architecture

B.Tech. 2nd YEAR (SEMESTER –III)
Electronics & Communication Engineering
(Common with 3rd Semester CSE)

L	T	P	Credits		
3	0	0	3	Class Work	: 25
				Examination	: 75
				Total	: 100
				Duration of Exam	: 3 Hours

Unit 1 (8 Lectures)

Functional blocks of a computer : CPU, Memory, input/output subsystems, control unit , Multilevel viewpoint of a machine: digital logic, micro architecture, ISA, operating systems, high level language , RTL Computer Buses (basic design using multiplexers), Bus width, Bus clocking(synchronous , asynchronous), bus arbitration, Bus examples(ISA bus, PCI bus, Universal serial bus) .

Data representation: signed number representation, fixed and floating point representations, character representation . computer arithmetic –integer addition and subtraction, ripple carry adder, carry look-ahead adder, etc. multiplication – shift-and add, Booth multiplier, carry save multiplier

Unit 2 (11 Lectures)

CPU Organization: Instruction set architecture of a CPU , interpretation of instructions, Instruction set based classification of processors (RISC, CISC, and their comparison), CPU Architecture types (accumulator, register, stack, memory/ register) Instruction cycle (Fetch-Decode-Execute)

Addressing modes(register, immediate, direct, indirect, indexed); Operations in the instruction set; Arithmetic and Logical, Data Transfer, Control Flow; Instruction set formats (fixed, variable, hybrid) Pipelining (basic concepts, throughput and speedup, hazards)

Unit 3 (10 Lectures)

Input /Output & Control Unit: Input Output Interface , Asynchronous data transfer (Strobe control, handshaking , serial transfer); Serial Vs parallel data transmission;Modes of data transfer, (Programmed I/O, Interrupt driven, Direct Memory access (DMA).
Control Unit design:- Control unit design methods (hardwired & microprogrammed) Control Memory, Address Sequencing, Micro instructions.

Unit 4 (12 Lectures)

Memory Organization: Memory device characteristics(access/ cycle time, cost per bit, volatility , storage density) ;Memory hierarchy ;Main memory Design (Semiconductor RAM & ROM organization, memory expansion,Static & dynamic memory types , their comparison); Associative memory Design ,Match logic ,Locality of reference principle(Temporal & Spatial)

Cache mapping(Direct , associative , set associative); Cache writing policies (Copy-Back , Write-through); Virtual Memory (Address space , memory space , Address mapping using pages , Page replacement)

Reference Books:

1. Computer System Architecture by M. Mano, Prentice-Hall.
2. Structured Computer Organisation by A.S. Tanenbaum, 6th edition, Prentice-Hall of India, Eastern Economic Edition.
3. Computer Organization, 5th Edi, by Carl Hamacher, Zvonko Vranesic,2002, SafwatZaky.
4. Computer Organization and Design, 2nd Ed., by David A. Patterson and John L. Hennessy, Morgan 1997, Kauffmann.
5. Computer Architecture and Organization, 3rd Edi, by John P. Hayes, 1998, TMH
6. Computer Organisation& Architecture: Designing for performance by W. Stallings, 4th edition, 1996, Prentice-Hall International edition.

Course Outcomes: At the end of the course, students will be able to learn the following:

1. How Computer Systems work & the basic principles
2. Instruction Level Architecture and Instruction Execution pipelining, parallelism and microprogramming
3. The current state of art in memory system design
4. How I/O devices are accessed and its principles

Note:

1. In Semester Examinations, the examiner will set two questions from each unit (total 8 questions in all) covering the entire syllabus. The students will be required to attend only five questions selecting atleast one question from each unit.
2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.

For student admitted in B. Tech. 1st Year (C-Scheme) in 2019 and all trailing students.

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ECE202C Communication Systems

B.Tech. 2nd YEAR (SEMESTER –IV)
Electronics & Communication Engineering

L	T	P	Credits		
3	0	0	3	Class Work	: 25
				Examination	: 75
				Total	: 100
				Duration of Exam	: 3 Hours

Unit 1 (8 Lectures)

Introduction to Communication System: Modulation, Demodulation, Radio Frequency Spectrum, Signals & their classification, Limitations & Advantages of a Communication System, Comparison of Analog & Digital Communication Systems, Historical Perspective, Modes & Medias of Communication.

Noise: Sources of Noise, External & Internal Noise, Noise Calculations, Noise Figure, Noise Figure Calculation, Noise Temperature, Noise in Communication Systems, Band Pass Noise Model, Cascaded States & its Noise Figure Calculation, Signal in presence of Noise, Pre-Emphasis & De-Emphasis, Noise Quieting Effect, Capture Effect, Noise in Modulation Systems.

Unit 2 (11 Lectures)

Linear Modulation:(AM) Basic definition & derivation for Modulation & Modulation Index, Modulation & Demodulation of AM, Suppressed Carrier Modulation, Quadrature Amplitude Modulation, SSB-SC, DSB-SC, VSB Modulation & Demodulation, Comparison of various AM Systems, Generation of AM waves.

Angle Modulation:

Basic definition & derivation for Modulation & Modulation Index, Generation of FM waves, Comparison between PM & FM, Frequency Spectrum of FM, B.W. & required spectra, Types of FM, vector representation of FM, Universal Curve, Multiple FM, Demodulation of FM waves, Demodulation of PM waves, Comparison between AM & FM.

Unit 3 (10 Lectures)

Transmitters & Receivers: Classification of Radio Transmitters, Basic Block Diagram of Radio Transmitter, Effect of Feedback on operation of Transmitter, Radio Telephone Transmitters, Privacy Device in Radio Telephony, FM Transmitter using Reactance Modulator, Armstrong FM Transmitter, Radio Receivers, Classification, TRF Receiver, Super Heterodyne Receiver, Image Rejection & Double Spotting, Choice of IF, Tracking & Alignment of Receivers, AGC.

Pulse Analog Modulation: Sampling theory, TDM, FDM, PAM, PWM, PPM, Modulation & Demodulation techniques of above all.

Unit 41 (12 Lectures)

Pulse Digital Modulation: Elements of Pulse Code Modulation, Noise in PCM Systems, Bandwidth of PCM Systems, Measure of Information, Channel Capacity, Channel Capacity of PCM System, Differential Pulse Code Modulation (DPCM). Delta Modulation (DM)

Digital Carrier Modulation And Demodulation Techniques: Digital Modulation Formats, Coherent Binary Modulation & Demodulation: ASK, BPSK, BFSK, Coherent Quadrature Modulation & Demodulation Techniques: QPSK, MSK.

Non Coherent BFSK, Differential PSK, M-Ary Modulation & Demodulation Techniques: M-Ary PSK, M-Ary QAM, M-Ary FSK, Synchronization: Carrier & Symbol Synchronization.

Reference Books:

1. Communication Systems — By Manoj Duhan – I. K. International
2. Electronic Communication Systems — By Kennedy – TMH
3. Communication Systems — By Singh & Sapre – TMH
4. Communication System Engineering — By John G. Proakis and Masoud Salehi, Pearson Education, 2015.
5. Analog Communication — By P. Chakarbarti – DR & Co.
6. Communication Systems — By Simon Haykins – Wiley

Course Outcomes: At the end of the course, students will be able to:

1. Familiarize with basic concepts like AM, FM, PM and digital modulation.
2. Differentiate between the working of transmitter and receiver of various analog and digital modulation techniques.
3. Design and rectify various communication gadgets and remove/reduce effects of noise on their working.
4. Suggest up gradation in the existing communication systems with lesser radiation output and better signal quality for the betterment of human kind.

Note:

1. In Semester Examinations, the examiner will set two questions from each unit (total 8 questions in all) covering the entire syllabus. The students will be required to attend only five questions selecting atleast one question from each unit.
2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.

   For student admitted in B. Tech. 1st Year (C-Scheme) in 2019 and all trailing students.

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ECE282C Communication Systems Lab

B.Tech. 2nd YEAR (SEMESTER –IV)
Electronics & Communication Engineering

L	T	P	Credits		
0	0	2	1	Class Work	: 25
				Examination	: 75
				Total	: 100
				Duration of Exam	: 3 Hours

LIST OF EXPERIMENTS:

1. To study and analyze waveform of Amplitude Modulation and determine the modulation index of amplitude modulation.
2. To study and analyze waveform of Amplitude Demodulation by any method.
3. To study and analyze waveform of Frequency Modulation and determine the modulation index of Frequency Modulation.
4. To study and analyze waveform of Frequency Demodulation by any method.
5. To study Amplitude Shift Keying (ASK) modulation.
6. To study Frequency Shift Keying (FSK) modulation.
7. To study Phase Shift Keying (PSK) modulation.
8. To study and analyze waveform of Phase Modulation.
9. To study Phase Demodulation.
10. To study Pulse Code Modulation.
11. To study Pulse Amplitude Modulation and Demodulation.
12. To study Pulse Width Modulation.
13. To study Pulse Position Modulation.
14. To study Delta Modulation.
15. To deliver a seminar by each student on Advance Communication System.

Reference Books:

1. Communication Systems — By Manoj Duhan – I. K. International
2. Electronic Communication Systems — By Kennedy – TMH
3. Communication Systems — By Singh & Sapre – TMH

Course Outcomes:

1. Students will get hands on practical exposure to concepts of AM, FM and PM
2. Students will be able to understand the basics of PAM, PPM and PWM.
3. Students will be able to analyze various digital carrier modulation and demodulation techniques
4. They can analyze noise and disturbance in modulated signals.

Note:-

1. Each laboratory class/section shall not be more than about 20 students.
2. To allow fair opportunity of practical hands on experience to each student, each experiment may either be done by each student individually or in group of not more than 3-4 students. Larger groups be strictly discouraged/disallowed.
3. Ten experiments are to be performed out of which at least seven experiments should be performed from the above list. Remaining three experiments should be performed from the above list or designed and set by the concerned department as per the scope of the syllabus.

ECE204C Analog Circuits

B.Tech. 2nd YEAR (SEMESTER –IV)
Electronics & Communication Engineering

L	T	P	Credits		
3	0	0	3	Class Work	: 25
				Examination	: 75
				Total	: 100
				Duration of Exam	: 3 Hours

Unit 1 (11 Lectures)

High Frequency Analysis of BJT and Multistage Amplifier: Hybrid Pi Model, CE Short Circuit Gain, Frequency Response, Alpha Cut off Frequency, Gain Bandwidth Product, Emitter Follower at High Frequencies. RC Coupled Transistor Amplifier, Lower & Upper Cut off Frequency, Frequency Response curve & Bandwidth, Transformer Coupled Amplifier, Direct Coupled Amplifier, Cascade Amplifier, Darlington Pair Amplifier, Distortion In Amplifiers.

Feedback Amplifiers: Feedback concept , Transfer Gain with Feedback, General Characteristics of Negative Feedback, Advantages & disadvantages, Input And Output Resistance, Voltage Series Feedback topology, Voltage Shunt, Current Series & Current Shunt topology ,Equivalent circuit for each topology, Effects of Negative Feedback.

Unit 2 (11 Lectures)

Oscillators: Introduction, Barkhausen Criterion, Oscillator with RC Feedback circuit (RC Phase Shift, Wien Bridge), Tuned Collector, Tuned Base Oscillator, LC Feedback circuits (Hartley, Colpitts), Condition for Sustained Oscillations & Frequency of Oscillations, Crystal Oscillator.

Power Amplifier: Definition, Application & Types of Power Amplifiers, Amplifier Classes of Efficiency (Class - A, B, AB, C), Push Pull Amplifiers, Distortion in Simple & Push Pull Amplifier, Complementary Push Pull Amplifier, Integrated Circuit Power Amplifier , Introduction to MOSFET & CLASS D Power Amplifier.

Unit 3 (10 Lectures)

Voltage Regulators: Voltage Regulation, Basic Series Regulators, Basic Shunt Regulators, Power Supply Parameters, Basic Switching Regulators, Step up Configuration, Step down Configuration, IC Voltage Regulator, SMPS.

Integrated Circuit Fabrication Process: oxidation, diffusion, ion implantation, photolithography, etching, chemical vapour deposition, sputtering, twin-tub CMOS process.

Unit 4 (10 Lectures)

Operational Amplifier Fundamentals: Block Diagram Representation, Ideal OP-AMP, OP-AMP Equivalent Circuit, Ideal Voltage Transfer Curve, Input Offset Voltage, Input Bias Current, Input Offset Current, Output Offset Voltage, Thermal Drift, Effect of Variation in Power Supply Voltages on Offset Voltage, Common Mode Configuration and CMRR, Frequency Response of OP-AMP: Open Loop Response, Close Loop Response, Input and Output Impedances, Effect of Finite Gain Bandwidth Product, Slew Rate.

Operational Amplifier Applications: Linear and non-linear applications-ADC and DAC, Multivibrators, Astable Multivibrator, Monostable Multivibrator, Bistable Multivibrator, 555 Timer, Monostable & Astable Operation with 555 Timer.

Text/Reference Books:

1. Electronics Device &Circuit By David.A. Bell - Oxford University Press.
2. Electronics Device & Circuit By Theodore F. Bogart, Jeffrey.S.Bealey,Guilermo Rico – 6th Edition, Pearson Education.
3. Electronics Device & Circuit By Robert Boylestad ,Louis Nashelsky, 11th Edition, Pearson Education, 2015.
4. Electronics Device By Floyd , 9th Edition, Pearson Education, 2015.
5. Integrated Electronics By Millman Halkias - TMH.
6. Electronic Devices & Circuits By B.P Singh and Rekha Singh, 2nd Edition, Pearson Education.
7. Electronics Device & Circuit By Sanjeev Gupta.
8. Electronics Device & Circuit By I. J. Nagrath - PHI
9. Electronic Principles By Albert Malvino.

Course Outcomes: At the end of the course, students will be able to:

1. Apply knowledge of electronic devices to construct electronic circuits with better applications for our real time causes.
2. Handle higher power capacity devices which will enhance the existing power handling capacity of electronic circuits.
3. Design various power supplies for different circuit requirements in turn help in reducing size of batteries.
4. Design same electronic circuits with another very important device i.e. operational amplifier with higher gain and easy design facilities.

Note:

1. In Semester Examinations, the examiner will set two questions from each unit (total 8 questions in all) covering the entire syllabus. The students will be required to attend only five questions selecting atleast one question from each unit.
2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.

For student admitted in B. Tech. 1st Year (C-Scheme) in 2019 and all trailing students.

Examinations and evaluation of students shall be conducted as per guidelines AICTE Examinations Reforms covering the entire syllabus. The students shall be made aware about the reforms.

ECE284C Analog Circuits Lab

B.Tech. 2nd YEAR (SEMESTER –IV)
Electronics & Communication Engineering

L	T	P	Credits		
0	0	2	1	Class Work	: 25
				Examination	: 75
				Total	: 100
				Duration of Exam	: 3 Hours

LIST OF EXPERIMENTS:

1. To analyze and study frequency response of RC coupled amplifier.
2. To analyze and study different types of feedback topology.
3. To analyze and study RC phase shift oscillator.
4. To analyze and study Wein bridge oscillator.
5. To analyze and study three terminal IC voltage regulator.
6. To draw characteristics of a transistor.
7. To analyze and study CE amplifier and calculate its gain.
8. To analyze and study 555 timer as a square wave generator.
9. To analyze and study SMPS power supply.
10. To analyze and study working of Push-Pull amplifier.

Text/Reference Books:

1. Electronics Device &Circuit — By David.A. Bell - Oxford University Press.
2. Electronics Device & Circuit — By Theodore F. Bogart, Jeffrey.S.Bealey,Guilermo Rico – 6th Edition, Pearson Education.
3. Electronics Device & Circuit — By Robert Boylestad ,Louis Nashelsky, 11th Edition, Pearson Education, 2015.
4. Electronics Device — By Floyd , 9th Edition, Pearson Education, 2015.
5. Integrated Electronics — By Millman Halkias - TMH.

Course Outcomes: At the end of the course, students will be able to:

1. Apply knowledge of electronic devices to construct electronic circuits with better applications for our real time causes.
2. Handle higher power capacity devices which will enhance the existing power handling capacity of electronic circuits.
3. Design various power supplies for different circuit requirements in turn help in reducing size of batteries.
4. Design same electronic circuits with another very important device i.e. operational amplifier with higher gain and easy design facilities.

Note:-

1. Each laboratory class/section shall not be more than about 20 students.
2. To allow fair opportunity of practical hands on experience to each student, each experiment may either be done by each student individually or in group of not more than 3-4 students. Larger groups be strictly discouraged/disallowed.
3. Ten experiments are to be performed out of which at least seven experiments should be performed from the above list. Remaining three experiments should be performed from the above list or designed and set by the concerned department as per the scope of the syllabus.

ECE206C Microprocessor & Interfacing

B.Tech. 2nd YEAR (SEMESTER –IV)
Electronics & Communication Engineering

L	T	P	Credits		
3	0	0	1	Class Work	: 25
				Examination	: 75
				Total	: 100
				Duration of Exam	: 3 Hours

Unit 1 (10 Lectures)

Overview of microcomputer systems and their building blocks, memory interfacing, concepts of interrupts and Direct Memory Access, Architecture & Instruction set of microprocessors (8086).

Unit 2 (12 Lectures)

Concepts of virtual memory, Cache memory, Architecture & Instructions set of X86 family Microprocessors (80186, 80286, 80386, 80486).

Unit 3 (10 Lectures)

Enhanced features of Pentium, Pentium Pro, Pentium-II, Pentium-III, Pentium-IV, Multi-core Technology, Mobile Processor.

Unit 4 (13 Lectures)

Interfacing with peripherals - Serial I/O, parallel I/O, A/D & D/A converters, PPI chip, DMA controller, Programmable Interrupt Controller, Programmable interval timer chips.

Text / Reference Books:

1. D. V. Hall, Microprocessors and interfacing, Tata McGraw-Hill, 2nd Edition, 2006.
2. Ray A. K. and Burchandi, Advanced Microprocessors and Peripherals Architectures, Programming and Interfacing, Tata McGraw Hill, 2002.
3. Brey, The Intel Microprocessors 8086- Pentium Processor, 8th Edition, Pearson Education.
4. M. A. Mazidi, J. P. Maizidi and Danny Causey, The X86 PC: Assembly Language, Design and interfacing, 5th Edition, Pearson Education, 2017.
5. Liu Yu-Chang and Gibson Glenn A., Microcomputer Systems: The 8086/8088 Family: Architecture, Programming and Design, 2nd Edition, Pearson Education, 2015.
6. L. B. Das, The X86 Microprocessor (Architecture, Programming and Interfacing), 2nd Edition, Pearson Education, 2014.
7. Daniel Tabak, Advanced Microprocessor", Tata McGraw-Hill, 2nd Edition, 2012.
8. B. Ram, Fundamentals of Microprocessor and Microcomputers, Dhanpat Rai Publications, 5th edition, 2008.

Course Outcomes: At the end of this course, the students will:

1. Understand the architecture & Instruction set of 8086 microprocessor and will be able to do assembly language programming
2. Understand the architecture & Instruction set of X86 family microprocessors and will be able to do assembly language programming
3. Understand the features of advance Microprocessors
4. Be able to do interfacing design of peripherals.

Note:

1. In Semester Examinations, the examiner will set two questions from each unit (total 8 questions in all) covering the entire syllabus. The students will be required to attend only five questions selecting atleast one question from each unit.
2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.

   For student admitted in B. Tech. 1st Year (C-Scheme) in 2019 and all trailing students.

   Examinations and evaluation of students shall be conducted as per guidelines AICTE Examinations Reforms covering the entire syllabus. The students shall be made aware about the reforms.

ECE286C Microprocessor & Interfacing Lab

B.Tech. 2nd YEAR (SEMESTER –IV)
Electronics & Communication Engineering

L	T	P	Credits		
0	0	2	1	Class Work	: 25
				Examination	: 75
				Total	: 100
				Duration of Exam	: 3 Hours

LIST OF EXPERIMENTS:

1. To study the architecture of 8086 microprocessor and 8086 microprocessor kit.
2. Write a program to add the contents of the memory location to the content of other memory location and store the result in 3rd memory location.
3. Write a program to add 16 bit number using 8086 instruction set.
4. Write a multiplication of two 16 bit numbers using 8086 instruction set.
5. Write a program for division of two 16 bit numbers using 8086 instruction set.
6. Write a program factorial of a number.
7. Write a Program to transfer a block of data with & without overlap.
8. Write a program to find the average of two numbers.
9. Write a Program to check whether data byte is odd or even
10. Write a program to find maximum number in the array of 10 numbers.
11. Write a program to find the sum of the first 'n' integers.
12. Write a program to generate a square wave.
13. Write a program to generate a rectangular wave.
14. Write a program to generate a triangular wave.

Reference Books:

1. D. V. Hall, Microprocessors and interfacing, Tata McGraw-Hill, 2nd Edition, 2006.
2. Ray A. K. and Burchandi, Advanced Microprocessors and Peripherals Architectures, Programming and Interfacing, Tata McGraw Hill, 2002.
3. Brey, The Intel Microprocessors 8086- Pentium Processor, 8th Edition, Pearson Education.
4. M. A. Mazidi, J. P. Maizidi and Danny Causey, The X86 PC: Assembly Language, Design and interfacing, 5th Edition, Pearson Education, 2017.
5. B. Ram, Fundamentals of Microprocessor and Microcomputers, Dhanpat Rai Publications, 5th edition, 2008.

Course Outcomes: At the end of the course, students will demonstrate the ability to:

1. Do basic assembly language programming of 8086.
2. Do advance assembly language programming of 8086.
3. Do basic assembly language programming of 8086 for interfacing of peripherals.
4. Do advance assembly language programming of 8086 for interfacing of peripherals.

Note:-

1. Each laboratory class/section shall not be more than about 20 students.
2. To allow fair opportunity of practical hands on experience to each student, each experiment may either be done by each student individually or in group of not more than 3-4 students. Larger groups be strictly discouraged/disallowed.
3. Ten experiments are to be performed out of which at least seven experiments should be performed from the above list. Remaining three experiments should be performed from the above list or designed and set by the concerned department as per the scope of the syllabus.

MC201CEnvironmental Studies

B.Tech. 2nd YEAR (SEMESTER –IV)
Electronics & Communication Engineering

L	T	P	Credits		
3	0	0	-	Class Work	: 25
				Examination	: 75
				Total	: 100
				Duration of Exam	: 3 Hours

Unit 1 (10 Lectures)

The Multidisciplinary Nature of Environmental Studies. Introduction to Environment: Definition, Scope, and importance of environmental studies; need for public awareness. Environmental Pollution: Definition, Cause and effects of: Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Role of an individual in prevention of pollution, Pollution case studies

Unit 2 (10 Lectures)

Natural Resources: Water resources: over-utilization, floods, drought, dams-benefits and problems; Mineral resources: Use and exploitation, environmental effects; Food resources : changes caused by modern agriculture, fertilizer-pesticide problems, water logging, Energy resources : Growing energy needs, renewable and non renewable energy sources; Land resources : Land as a resource, land degradation, man induced landslides, soil erosion and desertification.

Unit 3 (10 Lectures)

Ecosystems and Biodiversity: Concept of an ecosystem, Structure and function, Energy flow, Ecological succession, ecological pyramids. Concept of Biodiversity, definition and types, Hot-spots of biodiversity; Threats to biodiversity, Endangered and endemic species of India, Conservation of biodiversity.

Unit 4 (10 Lectures)

Social Issues and Environment: Water conservation, rain water harvesting, Environmental ethics: Issues and possible solutions. Climate change, global warming, acid rain, ozone layer depletion, Public awareness. Population growth, variation among nations, Family Welfare Programme. Human Population and the Environment - Population growth, Population explosion, Women and Child Welfare.

Reference Books:-

1. A Textbook of Environmental Studies by Asthana D.K. and Asthana Meera
2. Fundamental Concepts in Environmental Studies by Mishra D.D.
3. Environmental Studies by S.C Sharma M.P Poonia
4. Textbook of Environmental Studies for Undergraduate by Erach Bharucha
5. Environmental Studies: Third Edition by R. Rajagopalan

Course Outcomes: At the end of the course, students will demonstrate the ability to:

1. Develop concepts of basic environmental factors.
2. Introduce to the students the basic understanding of ecosystem and its structural and functional aspects and vast biodiversity
3. Outline aspects of environmental issues.
4. Understand the knowledge of energy resources and their environmental implications

Note:

1. In Semester Examinations, the examiner will set two questions from each unit (total 8 questions in all) covering the entire syllabus. The students will be required to attend only five questions selecting atleast one question from each unit.
2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.

   For student admitted in B. Tech. 1st Year (C-Scheme) in 2019 and all trailing students.

   Examinations and evaluation of students shall be conducted as per guidelines AICTE Examinations Reforms covering the entire syllabus. The students shall be made aware about the reforms.

CSE214C Object Oriented Programming

B.Tech. 2nd YEAR (SEMESTER –IV)
Electronics & Communication Engineering

L	T	P	Credits		
3	0	0	3	Class Work	: 25
				Examination	: 75
				Total	: 100
				Duration of Exam	: 3 Hours

Unit 1 (8 Lectures)

C++ Standard Library, Preprocessor Directives, illustrative Simple C++ Programs. Header Files and Namespaces, library files.Concept of objects, Object Oriented Analysis & Object Modeling techniques.

Object Oriented Concepts: Introduction to Objects and Object Oriented Programming, Encapsulation (Information Hiding), Access Modifiers: Controlling access to a class, method, or variable (public, protected, private, package), Other Modifiers, Polymorphism: Overloading, Inheritance, Overriding, Abstract Classes, Reusability

Classes and Data Abstraction: Introduction, Structure Definitions, Accessing Members of Structures, Class Scope and Accessing Class Members, Controlling Access Function And Utility Functions, Initializing Class Objects: Constructors.

Unit 2 (11 Lectures)

Using Destructors, Classes: Const(Constant) Object And Const Member Functions, Object as Member of Classes, Friend Function and Friend Classes, Using This Pointer, Dynamic Memory Allocation with New and Delete, Static Class Members, Container Classes and Iiterators, Function overloading.

Operator Overloading: Introduction, Fundamentals of Operator Overloading, Restrictions On Operators Overloading, Operator Functions as Class Members vs. as Friend Functions, Overloading, «, »

Unit 3 (10 Lectures)

Inheritance: Introduction, Inheritance: Base Classes And Derived Classes, Protected Members, Casting Base Class Pointers to Derived- Class Pointers, Using Member Functions, Overriding Base -Class Members in a Derived Class, Public, Protected and Private Inheritance, Using Constructors and Destructors in derived Classes, Implicit Derived -Class Object To Base- Class Object Conversion, Composition Vs. Inheritance.

Introduction to Virtual Functions, Abstract ,Base Classes And Concrete Classes, Polymorphism, New Classes And Dynamic Binding, Virtual Destructors, Polymorphism, Dynamic Binding.

Unit 4 (12 Lectures)

Files and I/O Streams and various operation on files. Stream Input/Output Classes and Objects, Stream Output, Stream Input, Unformatted I/O (with read and write), Stream Manipulators, StreamFormatStates, StreamErrorStates.
Templates & Exception Handling: Function Templates, Overloading Template Functions, Class Template, Class Templates and Non-Type Parameters, Templates and Inheritance, Templates and Friends.

Templates and Static Members: Introduction, Basics of C++ Exception Handling: Try Throw, Catch, Throwing an Exception;- Catching an Exception, Re-throwing an Exception, Exception specifications, Processing Unexpected Exceptions, Constructors, Destructors and Exception Handling, Exceptions and Inheritance.

Reference Books:

1. Object Oriented Programming in Turbo C++ by Robert Lafore ,1994, The WAITE Group Press.
2. Programming with C++ By D Ravichandran, 2003, T.M.H
3. Object oriented Programming with C++ by E Balagurusamy, 2001, Tata McGraw-Hill
4. C++ How to Program by H M Deitel and P J Deitel, 1998, Prentice Hall
5. Computing Concepts with C++ Essentials by Horstmann, 2003, John Wiley,
6. The Complete Reference in C++ By Herbert Schildt, 2002, TMH.
7. C++ Programming Fundamentals by Chuck Easttom, Firewall Media.

Course Outcomes: At the end of the course, students will be able to:

1. Specify simple abstract data types and design implementations, using abstraction functions to document them.
2. Recognise features of object-oriented design such as encapsulation, polymorphism, inheritance, and composition of systems based on object identity.
3. Name and apply some common object-oriented design patterns and give examples of their use.
4. Design applications with an event-driven graphical user interface.

Note:

1. In Semester Examinations, the examiner will set two questions from each unit (total 8 questions in all) covering the entire syllabus. The students will be required to attend only five questions selecting atleast one question from each unit.
2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.

For student admitted in B. Tech. 1st Year (C-Scheme) in 2019 and all trailing students.

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CSE284C Object Oriented Programming Lab

B.Tech. 2nd YEAR (SEMESTER –IV)
Electronics & Communication Engineering

L	T	P	Credits		
0	0	2	1	Class Work	: 25
				Examination	: 75
				Total	: 100
				Duration of Exam	: 3 Hours

LIST OF EXPERIMENTS:

1 Raising a number n to a power p is the same as multiplying n by itself p times. Write a function called power ( ) that takes a double value for n and an int value for p, and returns the result as double value Use a default argument of 2 for p. so that if this argument is omitted, the number will be squared. Write a main ( ) function that gets values from the user to test this function.

2 A point on the two dimensional plane can be represented by two numbers: an X coordinate and a Y coordinate. For example, (4,5) represents a point 4 units to the right of the origin along the X axis and 5 units up the Y axis. The sum of two points can be defined as a new point whose X coordinate is the sum of the X coordinates of the points and whose Y coordinate is the sum of their Y coordinate.

Write a program that uses a structure called point to model a point Define three points, and have the user input values to two of them Then set the third point equal to the sum of the other two. and display the value of the new point Interaction with the program might look like this:

Enter coordinates for PI : 3 4
Enter coordinates for P2: 5 7
Coordinates of PI + P2 are: 8 11

3 Create the equivalent of a four function calculator. The program should request the user to enter a number, an operator, and another number. It should then carry out the specified arithmetical operation: adding. subtracting, multiplying, or dividing the two numbers. (It should use a switch statement to select the operation). Finally it should display the result.

When it finishes the calculation, the program should ask if the user wants to do another calculation. The response can be 'Y' or 'N'. Some sample interaction with the program might look like this.

Enter first number. Operator, second number: 10/3
Answer = 3.333333
Do another (YI N)? Y
Enter first number. Operator, second number 12 + 100
Answer = 112
Do another (Y I N)? N

4 Create two classes DM and DB which store the value of distances. DM stores distances in metres and centimeters and DB in feet and inches. Write a program that can read values for the class objects and add one object of DM with another object of DB.

Use a friend function to carry out the addition operation. The object that stores the results maybe DM object or DB object. depending on the units in which the results are required. The display should be in the format of feet and inches or metres and centimetres depending on object on display.

5 Create a class rational which represents a numerical value by two double values- NUMERATOR & DENOMINATOR Include the following public member Functions:

- constructor with no arguments (default).
- constructor with two arguments.
- void reduce( ) that reduces the rational number by eliminating the highest common factor between the numerator and denominator.
- Overload + operator to add two rational number
- Overload » operator to enable input through cin
- Overload « operator to enable output through cou1.
- Write a main ( ) to test all the functions in the class.

6 Write a program that creates a binary file by reading the data for the students from the terminal. The data of each student consist of roll no., name (a string of 30 or lesser no. of characters) and marks.

7 A hospital wants to create a database regarding its indoor patients. The information to store include

- Name of the patient
- Date of admission
- Disease
- Date of discharge

Create a structure to store the date (year, month and date as its members). Create a base class to store the above information. The member function should include functions to enter information and display a list of all the patients in the database. Create a derived class to store the age or the patients List the information about all the to store the age of the patients. List the information about an the pediatric patients (less than twelve years in age).

8 Make a class Employee with a name and salary. Make a class Manager inherit from Employee. Add an instance variable, named department, of type string. Supply a method to toString that prints the manager's name, department and salary. Make a class Executive inherit from Manager Supply a method to String that prints the string Executive followed by the information stored in the Manager superclass object. Supply a test program that tests these classes and methods.

9 Imagine a tollbooth with a class called toll Booth. The two data items of a type unsigned int to hold the total number of cars, and a type double to hold the total amount of money collected. A constructor initializes both these to 0. A member function called payingCar ( ) increments the car total and adds 0.50 to the cash total. Another function, called nopayCar ( ). increments the car total but adds nothing to the cash total. Finally, a member function called displays the two totals.

Text/Reference Books:

1. Object Oriented Programming in Turbo C++ by Robert Lafore ,1994, The WAITE Group Press.
2. Programming with C++ By D Ravichandran, 2003, T.M.H
3. Object oriented Programming with C++ by E Balagurusamy, 2001, Tata McGraw-Hill
4. C++ How to Program by H M Deitel and P J Deitel, 1998, Prentice Hall
5. Computing Concepts with C++ Essentials by Horstmann, 2003, John Wiley,
6. The Complete Reference in C++ By Herbert Schildt, 2002, TMH.
7. C++ Programming Fundamentals by Chuck Easttom, Firewall Media.

Course Outcomes:

At the end of the course, students will demonstrate the ability to:

1. Use the characteristics of an object-oriented programming language in a program.
2. Use the basic object-oriented design principles in computer problem solving.
3. Use the basic principles of software engineering in managing complex software project.
4. Program with advanced features of the C++ programming language.

Note:-

1. Each laboratory class/section shall not be more than about 20 students.
2. To allow fair opportunity of practical hands on experience to each student, each experiment may either be done by each student individually or in group of not more than 3-4 students. Larger groups be strictly discouraged/disallowed.
3. Ten experiments are to be performed out of which at least seven experiments should be performed from the above list. Remaining three experiments should be performed from the above list or designed and set by the concerned department as per the scope of the syllabus.

MATH211C Numerical Methods

B.Tech. 2nd YEAR (SEMESTER –IV)
Electronics & Communication Engineering

L	T	P	Credits		
3	0	0	3	Class Work	: 25
				Examination	: 75
				Total	: 100
				Duration of Exam	: 3 Hours

Unit 1 (12 Lectures)

Solution of Polynomial and Transcendental Equations, Bisection Method, Newton-Raphson Method and Regula-Falsi. Finite differences, Relation between operators, Interpolation using Newton's, forward and backward difference formulae. Interpolation with unequal intervals: Newton's divided difference and Lagrange's formulae.

Unit 2 (12 Lectures)

Simultaneous Linear Equations: Elimination Method, Gauss and Gauss-Jordan Method, Jacobi's Method, Gauss-Seidal Method, Relaxation Method.

Numerical Differentiation and Integration: Derivatives from difference tables, Higher order derivatives, Extrapolation Techniques, Newton-Cotes integration formula, Trapezoidal rule, Simpson's rule, Boole's rule , Weddle's rule, Romberg's integration

Unit 3 (12 Lectures)

Ordinary differential equations: Taylor's series, Euler's methods, Methods Runge-Kutta Method of Fourth Order for solving first and second order equations. Milne's and Adam's Predicator-Corrector Methods. Power Method for Eigen values by Interations.

Unit 4 (12 Lectures)

Partial Differential Equations: Finite difference solution two dimensional Laplace equation and Poisson equation, Implicit and explicit methods for one dimensional heat equation (Bendre-Schmidt and Crank-Nicholson Methods), Finite difference explicit Method for Wave Equation, Dufort and Frankel Method.

Text/Reference Books:

1. P. Kandasamy,. K. Thilagavathy, K. Gunavathi, Numerical Methods, S. Chand & Co. 2nd Edition, Reprint 2012.
2. S.S. Sastry, Introductory methods of Numerical Analysis, PHI, 4th Edition, 2005
3. Erwin Kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.
4. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 35th, Edition, 2010.

Course Outcomes: At the end of the course:

1. The students will understand to find the solutions of various kinds of first order ordinary Differential equations.
2. The student will understand second order differential equations and to find their solutions along with variable coefficients, power series, Legendre's and Bessel's equations. .
3. The students will learn to solve polynomial, algebraic and Transcendental equations by various Methods, interpolations, Numerical Differentiation and numerical Integration.
4. The students will be able to find numerical solutions of Ordinary Differential Equations of first and second order and of Partial Differential Equations by various methods.

Note:

1. In Semester Examinations, the examiner will set two questions from each unit (total 8 questions in all) covering the entire syllabus. The students will be required to attend only five questions selecting atleast one question from each unit.
2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.

For student admitted in B. Tech. 1st Year (C-Scheme) in 2019 and all trailing students.

Examinations and evaluation of students shall be conducted as per guidelines AICTE Examinations Reforms covering the entire syllabus. The students shall be made aware about the reforms.

MATH213C Numerical Methods Lab

B.Tech. 2nd YEAR (SEMESTER –IV)
Electronics & Communication Engineering

L	T	P	Credits		
0	0	2	1	Class Work	: 25
				Examination	: 75
				Total	: 100
				Duration of Exam	: 3 Hours

LIST OF EXPERIMENTS:

Write down and execute the following programs using c/c++/matlab

1. To find the roots of non-linear equations using Bisection method
2. To find roots of non-linear equation using Newton's method
3. Curve fitting by least square approximations
4. To solve system of linear equations using Gauss-Elimination method
5. To solve system of linear equations using Gauss-Seidal iteration method
6. To solve system of linear equation using Gauss-Jordan method
7. To integrate numerically using Trapezodal rule
8. T integrate numerically using Simpsons's rule
9. To find largest Eigen value of a matrix by power-method
10. To find numerical solution of ordinary differential equations by Euler's method
11. To find numerical solution of ordinary differential equations by Runge-Kutta method
12. To find numerical solution of ordinary differential equations by Milne's method
13. To find numerical solution of Laplace equation
14. To find numerical solution of wave equation
15. To find numerical solution of heat equation

Text/Reference Books:

1. Applied Numerical Analysis by Curtis F. Gerald and Patrick G. Wheatley-Pearson, Edu. Ltd.
2. Numerical Methods: E.Balaguruswamy T.M.H

Course Outcomes: At the end of the course:

1. The students will understand to find the solutions of various kinds of first order ordinary Differential equations.
2. The student will understand second order differential equations and to find their solutions along with variable coefficients, power series, Legendre's and Bessel's equations. .
3. The students will learn to solve polynomial, algebraic and Transcendental equations by various Methods, interpolations, Numerical Differentiation and numerical Integration.
4. The students will be able to find numerical solutions of Ordinary Differential Equations of first and second order and of Partial Differential Equations by various methods.

Note:-

1. Each laboratory class/section shall not be more than about 20 students.
2. To allow fair opportunity of practical hands on experience to each student, each experiment may either be done by each student individually or in group of not more than 3-4 students. Larger groups be strictly discouraged/disallowed.
3. Ten experiments are to be performed out of which at least seven experiments should be performed from the above list. Remaining three experiments should be performed from the above list or designed and set by the concerned department as per the scope of the syllabus.

CSE303C Database Management Systems

B.Tech. 2nd YEAR (SEMESTER –IV)
Electronics & Communication Engineering
(Common with 5th Semester CSE)

L	T	P	Credits		
3	0	0	3	Class Work	: 25
				Examination	: 75
				Total	: 100
				Duration of Exam	: 3 Hours

Unit 1 (12 Lectures)

Basics of Database system: Architecture of DBMS, Applications of DBMS, Advantages and Disadvantages of DBMS. Categorization of DBMS, Data Abstraction, Data Independence, Data Definition Language (DDL), Data Manipulation Language (DML).

Data models: introduction to network model, Hierarchical model, Relational Model and object oriented data model. Key components of E-R Model. Specifying different constraints on E-R Models. Specialization and generalization.

Unit 2 (12 Lectures)

Relational Model: formal definition of relational model, Relational model Design.

Query Language: introduction to Tuple and domain relational calculus, operations of Relational algebra, Introduction to SQL , Implementation of relational algebra operations in SQL. Introduction to Open source and Commercial DBMS - MYSQL, ORACLE, DB2, SQL server.

Unit 3 (12 Lectures)

Refinement of Database Design: Domain and data dependency, types of functional dependencies. Armstrong's axioms, Normal forms, Dependency preservation, Lossless design.

Unit 4 (12 Lectures)

Transaction processing: Concurrency control, ACID property, Serializability of schedules, Locking and timestamp based schedulers, Multi-version and optimistic Concurrency Control schemes, Database recovery

Advance Topics in DBMS : Distributed databases, Data warehousing and data mining, Object oriented and object relational databases.

Text/Reference Books:

1. "Database System Concepts", 6th Edition by Abraham Silberschatz, Henry F. Korth, S. Sudarshan, McGraw-Hill
2. "Principles of Database and Knowledge – Base Systems", Vol 1 by J. D. Ullman, Computer Science Press.
3. "Fundamentals of Database Systems", 5th Edition by R. Elmasri and S. Navathe, Pearson Education
4. "Foundations of Databases", Reprint by Serge Abiteboul, Richard Hull, Victor Vianu, Addison-Wesley.
5. An introduction to **Database Systems**. Author : C J Date. Publisher : Wesley

Course Outcomes: At the end of the course:

1. Write relational algebra expressions for the query and optimize the developed expressions and design the databases using ER method and normalization for a given specification of the requirement
2. Construct the SQL queries for Open source and Commercial DBMS -MYSQL, ORACLE, and DB2 for a given specification
3. Determine the transaction atomicity, consistency, isolation, and durability for a given transaction-processing system,
4. Implement the isolation property, including locking, time stamping based on concurrency control and Serializability of scheduling.

Note:

1. In Semester Examinations, the examiner will set two questions from each unit (total 8 questions in all) covering the entire syllabus. The students will be required to attend only five questions selecting atleast one question from each unit.
2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.

   For student admitted in B. Tech. 1st Year (C-Scheme) in 2019 and all trailing students.

   Examinations and evaluation of students shall be conducted as per guidelines AICTE Examinations Reforms covering the entire syllabus. The students shall be made aware about the reforms.

CSE383C Database Management Systems Lab

B.Tech. 2nd YEAR (SEMESTER –IV)
Electronics & Communication Engineering

L	T	P	Credits		
0	0	2	1	Class Work	: 25
				Examination	: 75
				Total	: 100
				Duration of Exam	: 3 Hours

LIST OF EXPERIMENTS:

1. Study of oracle 11g interface, with different types of installations, Accounts and privileges in Oracle 11g.
2. Study of various Data Types and Data Objects in SQL
3. Implementation of Data Definition Language (DDL) Commands in SQL
4. Implementation of Data Manipulation Language (DML) Commands in SQL.
5. Implementation of various aggregate functions in SQL with group by and Having Clause.
6. Implementation of various String functions in SQL.
7. Implementation of various Date Functions in SQL.
8. Implementation of Data Control Language (DCL) Commands in SQL
9. Implantation of Data Integrity Constraints in SQL
10. Implementation of Different types of Views in SQL.
11. Implementation Nested Queries (Simple and Correlated) in SQL.
12. Implementation of JOINS (Natural, Equi, Theta, Inner, Outer) in SQL.
13. Implementation of SET Operations (UNION,INTER-SECTION, SET DIFFERENCE) in SQL
14. Implementation of SQL Commands related to Database recovery and Concurrency Control in DBMS.
15. Implementation different types of Index in SQL.

Text/Reference Books:

1. "Database System Concepts", 6th Edition by Abraham Silberschatz, Henry F. Korth, S. Sudarshan, McGraw-Hill
2. "Principles of Database and Knowledge – Base Systems", Vol 1 by J. D. Ullman, Computer Science Press.
3. "Fundamentals of Database Systems", 5th Edition by R. Elmasri and S. Navathe, Pearson Education

Course Outcomes: At the end of the course:

1. Student will be able to know basics of SQL.
2. Student will be able to construct the SQL queries for Open source and Commercial DBMS -MYSQL, ORACLE, and DB2 for a given specification.
3. Student will be able to implement SET Operations in SQL.
4. Student will be able to implement different types of Index in SQL.

Note:-

1. Each laboratory class/section shall not be more than about 20 students.
2. To allow fair opportunity of practical hands on experience to each student, each experiment may either be done by each student individually or in group of not more than 3-4 students. Larger groups be strictly discouraged/disallowed.
3. Ten experiments are to be performed out of which at least seven experiments should be performed from the above list. Remaining three experiments should be performed from the above list or designed and set by the concerned department as per the scope of the syllabus.